

Maryland Technical Architecture Framework (MTAF)

Enterprise Architecture Awareness Seminar

EA Maturity Models and MD EA Next Steps

June 21, 2005



- Final seminar remaining in the series
- Previous Seminars
 - ➤ Introduction to Enterprise Architecture July '04
 - Technical Architecture 101 November '04
 - ➤ EA and the Project Lifecycle January '05
 - > EA and the Value Proposition April '05
- Objective To provide a general background in Enterprise Architecture concepts



Agenda

- MTAF Initial Year Activities
- EA Practice Maturity Assessment
 - Background
 - Models
 - □ Why?
 - What?
 - How does MTAF compare?
- Candidate Next Steps



MTAF Initial Year Activities

- Capture Business Drivers
- Define Guiding Principles
- Design Technical Reference Model (TRM)
- Populate the TRM with the products and specifications being used by each agency
- Conduct EA Awareness Seminars
- Facilitate Standards Committees to develop product and specification standards
- Deploy Web-based Repository
- Develop a Transition Plan



MTAF Initial Year Activities (2)

- Leverage the data that has been collected to help agencies address technology concerns/issues:
 - State Retirement Agency: What are other agencies doing for document imaging/scanning? What agencies are using FileNet?
 - State Archives: What are other agencies doing for Intrusion Detection/Prevention?
 - Public Safety and Correctional Services: What are other agencies doing for Security?
 - Juvenile Services: What agencies are using both Novell NBO and BorderManager?



How do these activities compare to government best practice?



Maturity Models: Background

- Designed to support process improvements in various practice areas, e.g.,:
 - ➤ Software development
 - Systems engineering
 - > Systems acquisition
 - Security management
- Best known maturity model(s) Software Engineering Institute (SEI) Capability Maturity Model (CMM)



EA Maturity Models: Why?

- Benchmark the effectiveness of an EA practice – assess current situation
- Illustrate projected benefits of a supported and managed practice – set goals for the future
- Support EA practice management provide a path for product and procedural improvements

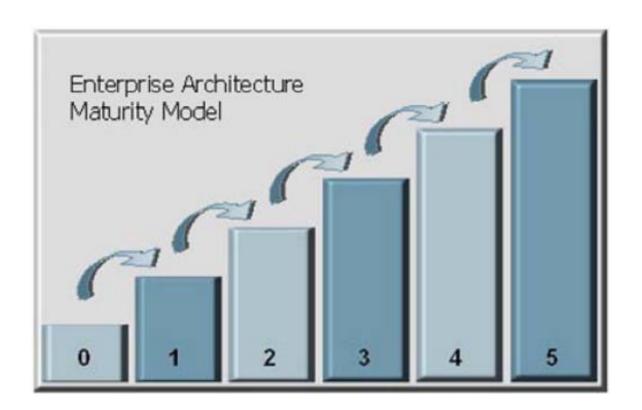


EA Maturity Models: What?

- National Association of State Chief Information Officers (NASCIO)
- U.S. Government Accountability Office (GAO)
- U.S. Office of Management and Budget (OMB)



EA Maturity Model





EA Maturity Models

Level	NASCIO	GAO	OMB
0	No program		No evidence presented
1	Informal program	Creating EA Awareness	EA is initial, informal and ad-hoc
2	Repeatable program	Building the EA management foundation	Formal but basic follows some best practice
3	Well-defined	Developing EA products	EA is beginning to be operationalized across the enterprise
4	Well-managed	Completing EA products	EA is operationalized and provides performance impact to business operations
5	Continuously improving vital program	Leveraging the EA to manage change	IT planning is optimized through EA

^{*}Each model applies a series of EA assessment criteria or categories



EA Maturity Model: NASCIO Categories*

Administration	Governance Roles & Responsibilities
Planning	EA program road map and implementation plan
Framework	Processes and templates used for Enterprise Architecture
Blueprint	Collection of actual standards and specifications
Communication	Education and distribution of EA and Blueprint detail
Compliance	Adherence to published standards, processes and other EA elements, and the processes to document and track variances
Integration	Touchpoints of management processes to the EA
Involvement	Support of EA program throughout the organization

^{*}Each category provides statements that describe an EA practice at each level (0-5).



NASCIO EAMM (Blueprint Category): Sample Descriptions

- Level 0: IT technology standards are not documented
- Level 1: Documentation of business drivers, technology standards are informal and inconsistent
- Level 2: Business drivers and strategic information have been identified
- Level 3: Classification of existing technology standards is consistent...
- Level 4: Documentation and classification of products is a standard practice...
- Level 5: New technologies are identified to improve business operations...



NASCIO EAMM: How does MTAF compare?

Category	Level	Description
Administration	2 – Repeatable Program	 A need for architecture governance has been identified EA program has begun to develop clear roles and responsibilities Governance committees are starting to form
Planning	2 – Repeatable Program	 The organization has begun to develop a vision for EA Organization has begun to develop EA tasks and resource requirements Organization has decided on a methodology and has begun to develop a plan for their EA program
Framework	2 – Repeatable Program	 The basic EA Program is documented Processes are planned and tracked The organization is beginning to reuse methods to capture critical EA information
Blueprint	3 – Well-defined Program	 Classification of existing technology standards is consistent Documentation of business drivers and strategic information is consistent



NASCIO EAMM: How does MTAF compare?

Category	Level	Description
Communication	3 – Well-defined Program	 The architecture is well-defined and communicated Training is provided for Senior Management and agencies regarding architecture and its benefits Training is provided for members of the EA committees
Compliance	1 – Informal Program	 The need for compliance to standards has been identified Compliance is informal and unstructured Compliance cannot be measured effectively because processes are not consistent across areas and/or projects
Integration	2 – Repeatable Program	 The need for integration to the EA Program Framework (Architecture Lifecycle Processes) has been identified Touch-points to management processes have been mapped but no details exist
Involvement	3 – Well-defined Program	 The organization begins to operate as a team using defined architecture programs and standards. Senior Management participate in various EA committees Business and technical staff participate in EA committees



NASCIO EAMM: How does MTAF compare?

- ~ level 2 EA practice
- Established repeatable methods that can be applied to continue architecture development and integration
- Highest levels of maturity relative to technical architecture and EA practice communications



GAO EA Management Maturity Framework

- A tool for benchmarking and improving EA maturity By describing the elements of an effective EA management program, the EAMMF provides a benchmarking tool for judging an enterprise's efforts to manage architecture development and use.¹
- The Framework is composed of **5 maturity stages**, **4 critical success attributes**, **and 31 core elements (in Version 1.1)** that link the attributes to the maturity stages



Department of Budget & Management

GAO FAMMF	Stage 1: Creating EA awareness	Stage 2: Building the EA management foundation	Stage 3: Developing EA products	Stage 4: Completing EA products	Stage 5: Leveraging the EA to manage change
Attribute 1: Demonstrates commitment		Adequate resources exist. Committee or group representing the enterprise is responsible for directing, overseeing, or approving EA.	policy exists for EA development.	Written and approved organization policy exists for EA maintenance.	Written and approved organization policy exists for IT investment compliance with EA.
Attribute 2: Provides capability to meet commitment		Program office responsible for EA development and maintenance exists. Chief architect exists. EA being developed using a framework, methodology, and automated tool.	EA products are under configuration management.	EA products and management processes undergo independent verification and validation.	Process exists to formally manage EA change. EA is integral component of IT investment management process.
Attribute 3: Demonstrates satisfaction of commitment		EA plans call for describing both the "as-is" and the "to-be" environments of the enterprise, as well as a sequencing plan for transitioning from the "as-is" to the "to-be." EA plans call for describing both the "as-is" and the "to-be" environments in terms of business, performance, information/data, application/service, and technology. EA plans call for business, performance, information/data, service, and technology descriptions to address security.	enterprise, as well as a sequencing plan for transitioning from the "as- is" to the "to-be." Both the "as-is" and the "to-be" environments are described or will	Both the "as-is" and the "to-be" environments are described in terms of business, performance, information/data, application/service, and technology. Business, performance, information/data, application/service, and technology descriptions address security. Organization CIO has approved current version of EA. Committee or group representing the	EA products are periodically updated. IT investments comply with EA. Organization head has approved current version of EA.
Attribute 4: Verifies satisfaction of commitment		EA plans call for developing metrics for measuring EA progress, quality, compliance, and return on investment.	Progress against EA plans is measured and reported.	Quality of EA products is measured and reported.	Return on EA investment is measured and reported. Compliance with EA is measured and reported.

Source: GAO.



GAO EAMMF: How does MTAF compare?

- ~ level 2 EA practice with some elements of level 3 maturity
- Demonstrated commitment to EA allocation of resources, formulation of committees
- EA capability exists Program Office/Chief Architect, framework/methodology, knowledgebase/repository
- Demonstrates satisfaction of commitment architectural drivers, target EA, transition plan
- Verifies commitment EA program understands the need to measure progress, compliance, and ROI



OMB EA Assessment

- The OMB EA Assessment Framework was designed to help each agency assess the capability of its EA program; it complements the GAO EAMMF which assesses EA program capacity.
- In comparison to the GAO EAMMF, the OMB Assessment primarily seeks to identify the extent to which an agency has developed EA that supports agency program performance by influencing IT planning and investment decisions, rather than on the structure and products within an agency's EA program.
- There are six maturity levels and four main assessment categories, with specific criteria aligned to each category and level. The assessment value levels range from 0 (No evidence presented) to 5 (IT planning is optimized through the EA.)



OMB EA Assessment (2)

Change	Description: Facilitating and managing change to any aspect of the enterprise.						
	No evidence presented	EA is initial, informal, and ad-hoc	Formal but basic, follows some best practices	EA is beginning to be operationalized across the enterprise (i.e. part of transition, CPIC, budget)	EA is operationalized and provides performance impact to business operations	IT planning is optimized through the EA	
	Level 0	Level 1	Level 2	Level 3	Level 4	Level 5	Assessment Value
A. Architectural Approach	No evidence presented	EA identifies an architectural approach. (framework i.e. Zachman, c4isr, etc)	Key stakeholder business drivers are documented.	The transition plan describes some portions of the changes needed to transition from As-Is to target; and information value chain model (operational views).	Process for identifying, managing, and closing gaps between target and current state is well documented within the EA.	The EA demonstrates a relationship of the transition, target, and gap closure to investment planning and execution.	
B. Strategic Direction	No evidence presented	EA demonstrates agency Head and stakeholder buy-in is documented, EA demonstrates management structure and control is established.	The EA defines an architectural processes, and presents a baseline architecture.	The EA defines a target architecture. EA defines change and risk management strategy or approach.	The EA defines a transition and sequencing strategy and plan. EA defines a communications strategy.	The EA demonstrates application of the EA for purposes of creating and maintaining investment programs. The EA demonstrates an implemented process for managing changes and updates to the EA.	
						Section Value	0.00



OMB EA Assessment (3)

Integration		ng the business rules an standardized, and the					
	No evidence presented	EA is initial, informal, and ad-hoc	Formal but basic, follows some best practices	EA is beginning to be operationalized across the enterprise (i.e. part of transition, CPIC, budget)	EA is operationalized and provides performance impact to business operations	IT planning is optimized through the EA	
	Level 0	Level 1	Level 2	Level 3	Level 4	Level 5	Assessmen Value
A. Interoperability	No evidence presented	Interoperability standards are defined at a conceptual basis (list of standards that are non-proprietary, i.e. patterns, web services, etc).	Interoperability standards are defined at the business function level, and are aligned to the TRM and SRM.	Interoperability standards are defined through patterns and are related to business functions. Business functions are aligned to components and services at the enterprise level.	Interoperability and sharing of information is one of the backbones of the target architecture.	Using common interoperability standards, the EA demonstrates the ability to link and integrate common technologies and business processes.	
B. Data	No evidence presented	Data architecture is broadly defined and not linked to other portions of the architecture.	Data relationships, interdependencies, and definitions are defined at a conceptual level.	Common and defined approach to integrating data with business processes and mission priorities is defined and used throughout the EA.	The target architecture reflects a transition plan and judgment on the data required for the future state.	EA demonstrates its ability to increase integration and promote the re-use of data within the enterprise and across other agencies. (linkage of data to common components, business functions (BRM).	
C. Business Logic	No evidence presented	Standard business rules (logic) are broadly defined and conceptual in nature.	Business rules are integrated and described for portions of the architecture.	Business rules are integrated and described throughout all portions of the architecture.	The transition strategy describes the changes required to business rules.	The EA demonstrates the results of viewing common business rules across the enterprise and across other agencies (integrated with the SRM).	
D. Interface	No evidence presented	Interface components and requirements are broadly (conceptually) defined.	Detailed external interface descriptions are contained within the EA.	Some form of a "node" diagram depicts inter- relationships between interfaces and business functions.	Interface descriptions and "node" diagrams are integrated with performance measures. Interfaces are represented at the enterprise and function levels.	The EA demonstrates the establishment of common components that are integrated through well defined interface requirements.	
					levels.	Section Value	0.0



OMB EA Assessment (4)

	No evidence presented	EA is initial, informal, and ad-hoc	Formal but basic, follows some best practices	EA is beginning to be operationalized across the enterprise (i.e. part of transition, CPIC, budget)	EA is operationalized and provides performance impact to business operations	IT planning is optimized through the EA	
	Level 0	Level 1	Level 2	Level 3	Level 4	Level 5	Assessment Value
A. Components	No evidence presented	The EA defines components at a high level of definition.	The EA defines components and shared services throughout the enterprise.	The EA uses services, components, and interoperability relationships to describe portions of the architecture.	The EA is described using services, components, and interoperability relationships through all artifacts and is described across all relationships.	The EA uses services, components, and interoperability relationships to describe transition and investment decision processes and to present a service/component enabled target architecture.	
B. Technical Platform	No evidence presented	EA contains TRM definitions only.	EA defines a high-level linkage to services and technology.	EA defines and integrates TRM with a view of services, which begins to show patterns.	EA provides an inventory of TRM and services, with a view towards identifying redundant TRM and service components (inter-relationships are described).	EA links all artifacts to TRM and services, and provides the ability to view redundancy across all EA products based on any TRM or service component.	
C. Performance	No evidence presented	EA conceptually defines performance measures.	EA links performance measures to some portions of the architecture segments.	EA defines detailed performance measures and links them to service and technical portions of the architecture.	EA defines detailed performance measures and links them to all technical and service layers of the architecture (clear relationship between performance measures and technical and service layers).	EA defines detailed performance measures, links them to all technical and service layers, and integrates performance measures with transition and investment planning	
D. Security	No evidence presented	Security standards are conceptually defined within the EA.	EA aligns security standards to the TRM.	Security standards are integrated within portions of the components/ applications/and technologies.	Security standards are tightly defined within all levels of components/applications/ technologies.	Security standards are tightly defined and are presented as part of the transition planning and investment analysis portions of the EA.	



OMB EA Assessment (5)

Business Alignment	Description: Ensuring the practices of the enterprise are aligned with strategic management intent.						
	No evidence presented	EA is initial, informal, and ad-hoc	Formal but basic, follows some best practices	EA is beginning to be operationalized across the enterprise (i.e. part of transition, CPIC, budget)	EA is operationalized and provides performance impact to business operations	IT planning is optimized through the EA	
	Level 0	Level 1	Level 2	Level 3	Level 4	Level 5	Assessment Value
A. Strategic Goals	No evidence presented	EA contains high-level strategic goals.	EA captures and depicts facts about functions, processes, and linkages/relationships or interdependencies.	Describes and depicts the linkage between internal business components and the achievement of business and customer- centric outcomes.	Establishes manageable and measurable performance objectives and demonstrate improved resource allocation decisions.	Business-IT value chain analysis has been performed (i.e Redundant investments and common business services identified).	
B. Business Target	No evidence presented	The EA defines conceptual target business functions (BRM).	Establishes a common vocabulary for describing the business context of the enterprise.	Describes a business vision which links the business vision to technology and target architecture.	The EA describes comparative determinations of which investments/programs / organizations are more efficient and effective through an alignment analysis.	The EA demonstrates the results or changes to business operations through alignment of investments and programs. (I.e. successful implementation of portions of the target architecture)	
Section Value						0.00	

Total Assessment Value: 0.00



OMB EA Assessment Framework: How does MTAF compare?

- EA practice maturity is between 1 and 2
- OMB focuses capacity of EA to improve mission performance and impact IT investment management decisions
- Rewards the integration of architecture elements, i.e., "line of sight" from business to data to services and technology



Where is MD's EA Program Today?

- No formal evaluation of the MD EA program has been conducted against any of these maturity models
- The MD EA program would most likely be evaluated at Level 1 or 2 against the maturity criteria laid out in these models
- MD has spent the first year focusing on the technology layer, building a technical architecture framework and a technical reference model
- In addition, MD has begun to establish some EA program management components



MTAF: Candidate Next Steps

- Maintain commitment to EA through support for EA program staff and framework of governance
- Continue to develop and maintain technology architecture and standards profile
- Demonstrate results through the integration of EA program with IT investment management process and project management
- Commence development of business architecture and application architecture
- Develop "line of sight" between business, applications and technology architecture
- Continue stakeholder education and communications
- Develop measures for progress, compliance, and ROI



Questions?